

APPLICANTS: NUNES RAMOS DE CARVALHO, Bruno Manuel et al.  
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### **REMARKS**

The present Response and Amendment is intended to be fully responsive to all points of objection and/or rejection raised by the Examiner and is believed to place the application in condition for allowance. Favorable reconsideration and allowance of the application is respectfully requested.

#### **Status of Claims**

Claims 1-10 and 12 are pending in the application. Claims 1-10 and 12 have been rejected. Claims 1-10 and 12 have been amended.

The amendments add no new matter.

#### **Claim Objection**

In the Office Action, the Examiner objected to the claims for reciting "an electrical bus" in claim 2 and "a microcontroller" in claim 8.

In accordance with the Examiner's observations, Applicants have amended claims 2 and 8.

Accordingly, Applicants request withdrawal of the objection to the claims.

### **CLAIM REJECTIONS**

#### **35 U.S.C. § 103 Rejections**

In the Office Action, the Examiner rejected claims 1, 9, and 10 under 35 U.S.C. § 103(a), as being unpatentable over Kuo (U.S. Patent No. 5,148,002) in view of Caldwell (Reissued U.S. Patent No. RE 36,808) and further in view of Kerr (U.S. Patent No. 4,404,460) and claims 2-8 and 12 under 35 U.S.C. § 103(a), as being unpatentable over Kuo in view of Caldwell and Kerr and further in view of Ovshinsky (U.S. Patent No. 4,642,413). Applicants respectfully traverse these rejections in view of the remarks that follow.

Claim 1 includes, *inter alia*, a refrigeration cycle.

Applicants respectfully assert that none of Kuo, Caldwell, Kerr or Ovshinsky teaches a refrigeration cycle.

In the paragraph bridging pages 2 and 3 of the Office Action, the Examiner equates Caldwell's cryogenic system with Applicants' refrigeration cycle. Applicants respectfully disagree. Caldwell uses a cryogenic dewars system (e.g., see dewars 19 and 19' in Figs. 2A

and 2B), which is a vacuum flask used for storing cryogenics (e.g., see [http://en.wikipedia.org/wiki/Cryogenic\\_storage\\_dewar](http://en.wikipedia.org/wiki/Cryogenic_storage_dewar), Appendix A). In contrast, a “refrigeration cycle” describes changes that take place in a refrigerant as it alternately absorbs and releases heat as it circulates through a refrigerator (e.g., see [http://en.wikipedia.org/wiki/Refrigeration#Cyclic\\_refrigeration](http://en.wikipedia.org/wiki/Refrigeration#Cyclic_refrigeration), Appendix B). A refrigeration cycle is at least cyclic, i.e., heat is absorbed and released in cycles. For example, refrigeration cycles produce cyclic phase changes such as evaporation and condensation of the refrigerant to cool and heat the refrigerant. In contrast, the system of Caldwell simply vaporizes cryogenic gas, but does not teach compressing the vaporized gas and re-vaporizing it to create a closed-loop cycle. In fact, the Caldwell reference itself distinguished the cryogenic dewars system from a cycle refrigeration system in col. 10, lines 24-33 by teaching that the cryogenic gas can be coupled with a closed-cycle refrigerator *for pre-cooling* (e.g., it is not part of the ongoing cooling system). Since Caldwell teaches that the refrigerator is for pre-cooling the cryogenic gas in the tanks and is not part of the thermal flow distributed through refrigeration pipes across the garment, claim 1 is allowable.

Claim 1 further includes, *inter alia*, a refrigeration unit *embedded within a garment* to produce a refrigeration cycle.

Applicants respectfully assert that none of Kuo, Caldwell, Kerr or Ovshinsky teaches a refrigeration unit *embedded within a garment*.

Although Kuo teaches “a semi-conductor (thermal-electric) material ... [to generate] “coolness”” (col. 11 lines 17-19 of Kuo), Kuo does not teach a refrigeration unit producing a refrigeration *cycle* embedded within the garment to generate coolness.

Caldwell teaches “a portable life support system that is worn on the back of the user ... interfaces with the rest of ... the garment and those elements not worn on the back” (col. 4 lines 7-12 of Caldwell). That is, the cryogenic dewars (19) and cooling coil (132) are worn on the patient’s back (see Figs. 2A, 2B and 5) and not embedded within the garment (12), as required in claim 1.

Claim 1 further includes, *inter alia*, plugs to power devices external to the garment.

Applicants respectfully assert that none of Kuo, Caldwell, Kerr, nor Ovshinsky teaches this feature.

The Examiner cites to “plugs” (104) of Fig. 3A and (182) of Fig. 8A of Kuo. Plugs (104) and (182) connect heating modules (40) and/or (42) to a power source (50) (e.g., see col. 6, lines 34-36 and col. 9 lines 53-55). Heating modules (40) and (42) and power supply (50) are all embedded in the garment (e.g., as shown in Fig. 1C of Kuo). Thus, neither of Kuo’s plugs (104) and (182) provides power to devices *external* to the garment, as required in claim 1.

Therefore, claim 1 is allowable over Kuo, Caldwell, Kerr, and Ovshinsky.

Each of claims 2-10 and 12 depends from claim 1 and therefore includes all the limitations thereof. Therefore, Applicants respectfully assert that claims 2-10 and 12 are likewise allowable.

Applicants respectfully request reconsideration and withdrawal of the rejection of claims 1-10 and 12 under 35 U.S.C. § 103(a).

### CONCLUSION

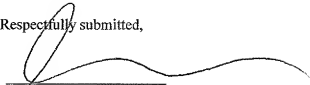
In view of the foregoing amendments and remarks, Applicants assert that the pending claims are allowable. Their favorable reconsideration and allowance is respectfully requested.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

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Except for the Petition for Three (3) Months Extension of Time being paid separately, no fees are believed to be due in connection with this paper. However, if any such fees are due, please charge any fees associated with this paper to deposit account No. 50-3355.

Respectfully submitted,



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